

1. (thrice amended) A fuel additive dispensing system, comprising:

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a housing, adapted to be affixed to a fuel dispenser having a fuel dispensing hose;
a hydraulic module, disposed at least partially within said housing, having a fluid input adapted to be coupled to at least one source of fuel additive and a fluid output flow adapted to be coupled to said fuel dispensing hose to introduce said additive into a stream of fuel delivered through said fuel dispensing hose;
control circuitry, coupled to said hydraulic module, for generating electrical control signals applied to said hydraulic module to cause a controlled amount of said additive to be released from said at least one source to flow through said fluid input and fluid output and into said fuel dispensing hose;
at least one sensor, coupled to said control circuitry and to said hydraulic module, for acquiring data reflecting actual operation of said hydraulic module during a plurality of successive fueling transactions [over time];
processing circuitry, coupled to said at least one sensor, for comparing said data reflecting actual operation of said hydraulic module [over time] during said plurality of successive fueling transactions with data corresponding to target operation of said hydraulic module;

wherein said controlled amount of said additive is adjusted based upon said comparison of data reflecting actual operation of said hydraulic module during said plurality of successive fueling transactions with said data corresponding to target operation of said hydraulic module.

3. A fuel additive dispensing system in accordance with claim 1, wherein said fluid input comprises an input flow control manifold and said fluid output comprises an output flow control manifold.

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4. A fuel additive dispensing system in accordance with claim 1, wherein said hydraulic module further comprises a flow meter coupled to said control circuitry for monitoring the flow of additive through said hydraulic module.

5. A fuel additive dispensing system in accordance with claim 4, wherein said hydraulic module operates to dispense said additive with an accuracy of at least approximately 0.75%.

6. A fuel additive dispensing system in accordance with claim 1, wherein said controlled amount of additive is released in at least one increment into said stream of fuel.
7. A fuel additive dispensing system in accordance with claim 1, wherein said controlled amount of additive is released each time a predetermined amount of fuel is delivered through said fuel dispensing hose.
8. A fuel additive dispensing system in accordance with claim 1, further comprising a graphic display viewable by a user of said fuel dispenser.
9. A fuel additive dispensing system in accordance with claim 8, further comprising at least one user-actuable control for activating said dispensing system to dispense said fuel additive into said stream of fuel.
10. A fuel additive dispensing system in accordance with claim 1, wherein said at least one source of fuel additive is external to said housing.
11. A fuel additive dispensing system in accordance with claim 1, wherein said controlled amount of said additive is an amount proportional to a total amount of fuel in said stream of fuel.
12. A fuel additive dispensing system in accordance with claim 1, wherein said controlled amount of said additive is an amount specified by a user of said fuel dispenser.
13. A fuel additive dispensing system in accordance with claim 8, further comprising a proximity detector, coupled to said control circuitry, for detecting the presence of a person in the vicinity of said system.
14. A fuel additive dispensing system in accordance with claim 13, wherein said proximity detector applies a detection signal to said control circuitry upon detection of a person in the vicinity of said system.
15. A fuel additive dispensing system in accordance with claim 14, wherein said control circuitry is responsive to said detection signal to display at least one predetermined image on said graphic display.

16. A fuel additive dispensing system in accordance with claim 8, wherein said graphic display is responsive to said control circuitry to display a plurality of separate images thereon.

17. A fuel additive dispensing system in accordance with claim 1, further comprising a user interface coupled to said control circuitry, wherein said control circuitry is responsive to a selection signal generated by said control circuitry to initiate dispensation of said fuel additive.

18. A fuel additive dispensing system in accordance with claim 17, wherein said user interface is responsive to user interaction to generate said selection signal.

19. A fuel additive dispensing system in accordance with claim 18, wherein said user interface is responsive to said user interaction occurring prior to said stream of fuel being delivered through said fuel dispensing hose to generate said selection signal.

C2 20. A fuel additive dispensing system in accordance with claim 18, wherein said user interface is responsive to said user interaction occurring while said stream of fuel is being delivered through said fuel dispensing hose to generate said selection signal.

21. (thrice amended) A method of dispensing a fuel additive, comprising:

(a) coupling a fluid input of a hydraulic module to a source of said additive;
(b) coupling a fluid output of said hydraulic module to a fuel dispensing hose;
(c) applying electrical signals to said hydraulic module to cause a controlled amount of said additive to flow from said source, through said hydraulic module, and into said stream of fuel flowing through said fuel dispensing hose;

(d) obtaining measurements of actual performance of said hydraulic module during a plurality of successive fueling transactions;

(e) comparing said measurements of actual performance of said hydraulic module during said plurality of fueling transactions to target values;

wherein said controlled amount of said additive for a subsequent fueling transaction is adjusted based upon said comparison of said measurements of actual performance of said hydraulic module during said plurality of fueling transactions to said target values.

C3 23. A method in accordance with claim 21, wherein said fluid input comprises an input flow control manifold and said fluid output comprises an output flow control manifold.

24. A method in accordance with claim 21, wherein said hydraulic module further comprises a flow meter coupled to said control circuitry for monitoring the flow of additive through said hydraulic module.

25. A method in accordance with claim 24, wherein said hydraulic module operates to dispense said additive with an accuracy of at least approximately 0.75%.

26. A method in accordance with claim 21, wherein said controlled amount of additive is released in successive increments into said stream of fuel.

27. A method in accordance with claim 21, wherein said controlled amount of additive is released each time a predetermined amount of fuel is delivered through said fuel dispensing hose.

28. A method in accordance with claim 21, further comprising providing a graphic display viewable by a user of said fuel dispenser.

29. A method in accordance with claim 28, further comprising providing at least one user-actuable control for activating said dispensing system to dispense said fuel additive into said stream of fuel.

30. A method in accordance with claim 21, wherein said at least one source of fuel additive is external to said housing.

31. A method in accordance with claim 21, wherein said controlled amount of said additive is an amount proportional to a total amount of fuel in said stream of fuel.

32. A method in accordance with claim 21, wherein said controlled amount of said additive is an amount specified by a user of said fuel dispenser.

33. A method in accordance with claim 28, further comprising a proximity detector, coupled to said control circuitry, for detecting the presence of a person in the vicinity of said system.

34. A method in accordance with claim 33, wherein said proximity detector applies a detection signal to said control circuitry upon detection of a person in the vicinity of said system.

35. A method in accordance with claim 34, wherein said control circuitry is responsive to said detection signal to display at least one predetermined image on said graphic display.

36. A method in accordance with claim 28, wherein said graphic display is responsive to said control circuitry to display a plurality of separate images thereon.

37. A method in accordance with claim 21, further comprising a user interface coupled to said control circuitry, wherein said control circuitry is responsive to a selection signal generated by said control circuitry to initiate dispensation of said fuel additive.

38. A method in accordance with claim 37, wherein said user interface is responsive to user interaction to generate said selection signal.

39. A method in accordance with claim 38, wherein said user interface is responsive to said user interaction occurring prior to said stream of fuel being delivered through said fuel dispensing hose to generate said selection signal.

40. A method in accordance with claim 38, wherein said user interface is responsive to said user interaction occurring while said stream of fuel is being delivered through said fuel dispensing hose to generate said selection signal.

41. A fuel additive dispensing system in accordance with any of claims 1 and 3 through 20, wherein said control circuitry is adapted to be coupled to a retail point-of-sale system including a point-of-sale server for controlling a fuel dispensing transaction.

42. A fuel additive dispensing system in accordance with claim 41, wherein fuel and said fuel additive are dispensed in a single integrated transaction.

43. A fuel additive dispensing system in accordance with claim 42, wherein a predetermined amount of said additive is dispensed.

44. A fuel additive dispensing system in accordance with claim 42, wherein the amount of additive dispensed is proportional to the amount of said fuel dispensed.

45. A fuel additive dispensing system in accordance with claim 41, wherein said control circuitry is responsive to at least one signal from said retail point-of-sale system to disable said fuel additive dispensing system.

46. A method in accordance with any of claims 21 through 40, wherein said control circuitry is adapted to be coupled to a retail point-of-sale system including a point-of-sale server for controlling a fuel dispensing transaction.

47. A method in accordance with claim 46, further comprising dispensing said fuel and said fuel additive in a single integrated transaction.

48. A method in accordance with claim 46, further comprising dispensing a predetermined amount of said additive.

49. A method in accordance with claim 46, further comprising dispensing an amount of additive dispensed proportional to the amount of said fuel dispensed.

50. A fuel additive dispensing system in accordance with claim 46, wherein said control circuitry is responsive to at least one signal from said retail point-of-sale system to disable said fuel additive dispensing system.

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Pursuant to 37 C.F.R. § 1.121, "marked up" versions of the foregoing claims showing the amendments made thereto are reproduced on the separate pages comprising Appendix A to this Response.

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